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IMPROVEMENTS IN RICE GROWING TECHNIQUES IN CHINA

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[Summary: The Ministry of Agriculture recommends certain methods of planting, irrigating, and fertilizing rice to increase production. The Han-ku Mechanized State Farm reports on methods of growing paddy rice on saline and alkaline soils by elimination of transplanting, controlled irrigation, and applications of fertilizer.]

Improved Methods for Growing Paddy Rice

The Ministry of Agriculture of the Central People's Government recommends the following methods to increase production of rice.

Plant seed evenly and space them properly so that sprouts will absorb fertilizer equally and grow at a uniform rate. From 100 to 200 catties of seed per mou should be used. Early planting, when the weather is somewhat cold, requires more seed than late planting.

Scientific experiments show that fertilizer applied to the sprouts after planting is three or four times as effective as fertilizer applied to the field before planting. During sprouting, rice needs nitrogen, calcium, and phosphorous. For this reason, the basic fertilizer should be one relatively rich in nitrogen, such as animal manure or bean cake, and should be well rotted before using to hasten its action. Green fertilizer should be used 20 days before planting. After planting, each mou should receive 200 to 300 catties of wood or straw ashes or 1,500 catties of dried pond mud. These materials not only supply calcium but also absorb and hold heat and thus promote sprouting and prevent rot; they should not be used, however, on saline or alkaline soils. Most organic fertilizers contain sufficient phosphorous. After shoots are one or two inches high and again about 5 days before transplanting, use a quick-acting nitrogenous fertilizer.

Deep plowing increases the effectiveness of the soil, fertilizer, and water; promotes root and stalk growth; decreases weed and insect damage; and provides good conditions for increased production. The depth of plowing varies according to local conditions but should reach 5-6 inches. For this reason, one of the most urgent needs is for improved farm implements.

In each locality, the methods that have produced best results should be used. Early planting of common rice should be at the rate of 12,000 to 20,000 clumps per mou, at a distance of 5-7 inches between rows. Each clump should contain 6-8 plants. Late planting should be at a density of 8,000-16,000 clumps per mou at a distance of 6-9 inches. Each clump should have four to eight plants. In double-crop areas, the total number of clumps for both crops should be 14,000-22,000 per mou.

The shallow-water system of irrigation should be used. When transplanting, only two or three tenths of an inch of water is necessary. Afterward, the depth should be increased to one inch to prevent shaking by the wind and promote root growth. When the sprouts are well established, maintain one half to one inch of water. When the grain begins to ripen, the field can be drained to hasten ripening except when a second crop is to be planted. During the growing period, cultivation and fertilizing operations should be combined and the field allowed to dry out at appropriate times to aerate the soil, raise soil temperature, and promote growth of shoots and roots.

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Experimental Planting of Paddy Rice in Saline and Alkaline Soils

The Han-ku Mechanized State Farm is experimenting with growing paddy rice by direct planting on unfavorable soil. "Direct planting" refers to the elimination of transplanting.

The Han-ku farm has 15,420 mou of saline and alkaline soil, of which 11,226 mou are suitable for the use of farm machines. The salt content is as high as 5.78 percent but averages 1-2 percent.

In 1952, 1,630 mou were planted to paddy rice. During the growing season, 330 mou were flooded with brackish water that had backed up from the sea and the crop was destroyed, but the remaining 1,300 mou produced 648,553 catties or an average of 498.89 catties per mou. This was 10.8 percent above the estimated 450 catties and 55.7 percent above the average of 320 catties per mou produced by neighboring farmers.

In 1951, the unused land was plowed and left without harrowing. Twenty days before planting (3-8 April 1952) when the moisture content was 20 percent, the land was plowed with a NATI tractor drawing a five-bottom plow to a depth of 22.4 centimeters. One week before planting it was harrowed with a 20-disk harrow to a depth of 8-10 centimeters. The land was made as level as possible to facilitate planting and irrigation.

Planting was done on 30 April at a temperature of 18 degrees centigrade. A NATI tractor was used to draw a 24-row seed drill on which alternate rows had been plugged so that the distance between rows was 30 centimeters and the distance between plants was 8 centimeters. The drill was set to plant at a depth of 1 to 1.5 centimeters but because of carelessness and uneven ground, 150 mou were planted at a depth of 5 centimeters. The seed on this land required 20 days to sprout and the shoots were so weak that they were later killed by alkaline water.

Ditches were dug within 5 days after planting. Every 100 meters, a ditch was dug 0.6 meters deep and 1.3 meters wide at the top. A drainage ditch of the same size was dug every 50 meters. At intervals of 25 meters, smaller ditches were dug perpendicular to those described above. The plots of land, therefore, were 50 by 25 meters and contained 1.85 mou.

The land was flooded to a depth of 5-8 centimeters three times in 10 days. Each time, all the water was allowed to soak in before reflooding. By this time, the shoots were 1-2 centimeters high and a sprouting rate of 85 percent was obtained. Reduction in percentage of alkalinity ranged from 0.006 to 0.046.

No basic fertilizer was used before plowing. When the sprouts had reached a height of 5 centimeters, each mou was fertilized with 100 catties of bean cake and seven catties of sulfates [type not indicated.] Two months later, a second application of 100 catties of bean cake per mou was made and the last application of fertilizer was 20 catties per mou of sulfates applied 18 days after the second. Experience showed that the first application was excessive, while the second was delayed beyond the period originally planned so that production was somewhat reduced.

Along the Gulf of Chihli, these methods were used on saline lands and salinity was reduced from one or 2 percent to 0.045 percent.

The effect of planting, fertilizing, and cultivating at the proper time is shown by plot number 7 where a yield of 639.17 catties per mou was obtained in an area of 261 mou.

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